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PROJECTS AND THE PROJECT METHOD

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PROJECTS AND THE PROJECT METHOD

A definition of the term "project." Although the term "project" only recently has become widely used in educational literature, it is not a new word. For many years it has been used by the United States Department of Agriculture to mean "carefully planned investigations in agricultural science covering a considerable period of time." Stevenson[1] states that the first use of "project" as a name for an instructional procedure was by R. W. Stimson who employed the phrase "home project" about 1908 to designate a type of vocational agricultural education. Within a few years the term "project" began to be used by teachers of manual arts and the sciences to designate a type of instructional procedure, and now it is employed by teachers in other fields.

A variety of definitions have been proposed for "project" as the term is now used but the one formulated by Kilpatrick[2] appears to be most helpful. He defines a project to be "any unit of purposeful experience, any instance of purposeful activity where the dominating purpose, as an inner urge, (1) fixes the aim of the action, (2) guides its process, and (3) furnishes its drive, its inner motivation." A somewhat different definition is given by Stevenson[3] who states that "a project is a problematic act carried to completion in its natural setting." This definition is not necessarily incompatible with that given by Kilpatrick but it emphasizes different phases. The requirement that the act be "carried to completion" is implied only very indirectly, if at all, in Kilpatrick's statement.

A concept of learning and teaching. In order to comprehend a formal definition of a project, it is necessary to have in mind certain aspects of the processes of learning and teaching. Learning is a process of activity; what one learns is the product or outcome of his own activity, physical, intellectual and emotional. The activity of another person contributes to one's learning only as it affects his activity. Thus the teacher's task is, first, to stimulate his pupils to engage in activities that will be highly productive of the specific habits, knowledge and general

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[1] STEVENSON, J. A. The Project Method of Teaching. New York: The Macmillan Company, 1921, p. 40.
[2] KILPATRICK, W. H. "Dangers and difficulties of the project method and how to overcome them—a symposium," Teachers College Record, 22:283, September, 1921.
[3] STEVENSON, J. A. Op. cit., p. 43.

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patterns of conduct[4] which he desires to engender and, second, to direct them as they endeavor to participate in these activities so that there will be a minimum of wasted effort.

The preceding paragraph epitomizes a concept of learning and teaching which is generally accepted in theory even though not infrequently violated in practice. This concept is opposed to the blank tablet theory of the educational process in which the teacher was assumed to "communicate" or "transfer" ideas, principles and so forth to the pupil who in this way was educated by the acts of the teacher. Although the blank tablet theory of learning was discredited years ago and the principle that one learns only as the result of his own activity is generally accepted, our pedagogical vocabulary includes many words and phrases whose meaning retains traces of the concept of learning as a passive process in which the teacher rather than the pupil is the active agent. It is not unusual to read that a teacher "imparts" knowledge and is responsible for "making his subject interesting," that he is expected to "explain" or "demonstrate," that his function is to "communicate" what he knows to his students, that the "telling method" is appropriate on certain occasions, that the teacher must "prepare" his students for a new topic and then conform to certain principles in "presenting" it. Even such terms as subject-matter, content, textbook, and curriculum are frequently used in a way which implies that learning is at best a process of passive absorption.

It is, of course, improbable that any person who has studied modern psychology would agree with these implications if asked explicitly concerning them, but contact with students in education courses and with teachers has convinced the writer that the blank tablet theory of learning still functions in the thinking of many persons and in much of our educational practice. This condition appears to be due in part, perhaps largely, to the use of a number of words and phrases which tend to imply that learning is a relatively passive process, the teacher being the active agent.

Conditions for efficient educative activity. Learning is an active process but it does not follow that all activity is equally educative. In the first place, if certain controls of conduct are to be acquired, the learner must engage in certain activities. Skill in handwriting is not attained by practicing on a typewriter; mastery of the English language as an instrument of expression does not result from solving problems

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[4] "General patterns of conduct" is used as a general name for ideals, attitudes, interests, tastes, points of view, and the like.

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in arithmetic; the study of history contributes very little if any to a knowledge of a science; a pupil does not acquire skill in adding by doing examples in division. Each type of activity leads to certain character-istic outcomes, and in general a given skill or item of knowledge can be acquired only by engaging in a certain activity or activities which meet certain requirements.

In many cases two or more types of activities may lead to the same outcomes but one type may be more efficient than the other. For ex-ample, there are several methods of teaching handwriting, each being based on a certain series of exercises, but there is probably one best series of exercises, or at least there are certain better series of exercises. Similarly, achievement in spelling, silent reading, and other fields is probably attained more efficiently through some series of experiences than through others. Furthermore, the attainment of the maximum efficiency in learning is dependent upon the distribution of the learning activities as well as upon their nature and amount.

The effectiveness of a given activity such as practicing an exercise on the piano, doing a list of examples in arithmetic, reading a textbook, writing a theme, cooking a meal and the like is conditioned by the learner's attitude. In order to produce the desired changes, it is neces-sary that his attitude be such that he derives satisfaction from the activity. If he is not interested, he will learn little or nothing. Further-more, it appears that phases of the activity are dependent upon the learner's attitude. For example, in studying a textbook, a pupil who has a definite purpose, who is interested in understanding the state-ments of the author, engages in mental and emotional activities that are not included in the experience of one who merely reads the pages with an attitude of indifference or antagonism.

Two methods of stimulating participation in appropriate learning activities. The teacher faces the problem of securing pupil-participation in appropriate learning activities under conditions that are favorable to maximum efficiency. The traditional instructional procedure, which is still followed by most teachers, is suggested by the term "assignment method." According to this procedure, exercises assigned by the teacher constitute the basis of the learning activities of the pupils in school. In making assignments teachers are expected to secure an appropriate "mind-set" and to motivate the doing of the exercises. After the doing of the assigned exercises is begun, the teacher directs the learning activ-ities of his pupils and assigns such supplementary exercises as may appear to be needed.

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The "project method" represents a distinctly different approach to the stimulation of pupil-participation in appropriate learning activities. No assignments are made. Instead, the pupils are given an apportunity and are encouraged to do things they want to do. This does not mean that they are allowed to do as they please and are subject to no restraint nor direction. Spontaneous proposals by the pupils which do not appear to lead to highly educative activity may be discouraged or even vetoed by the teacher. On the other hand, the teacher may stimulate purposing by the pupils and even suggest projects but direct assignments have no place in the project method.

The phrase, "problem method," has been used to designate a type of instructional procedure which is sometimes confused with the project method. There is, however, a fundamental difference. Under the problem method the exercise is assigned; under the project method it is proposed by the pupils. The actual activities of the pupils and the outcomes, both mental and material, may appear to be the same but the teacher's point of view is different. The problem method is the assignment method applied to certain types of exercises.[5]

Before entering upon the consideration of the relative merits of the assignment method and the project method, it will be helpful to elaborate the definition of a project and to consider descriptions of a few typical ones.

Types of projects. In elaborating his definition of a project, Kilpatrick describes four types:

I. Construction projects. "Experiences in which the dominating purpose is to do, to make or to effect."

II. Enjoyment projects. In these the student purposes participation in an activity because he desires the enjoyment or satisfaction which it appears to afford.

III. Problem projects. In order for a problem to become a project, the student must purpose the solving of it, usually without an assignment being made.

IV. Learning projects. In this type of project the purpose "is to acquire some item or degree of knowledge or skill."

Recognition of these types gives the term project a more compre-

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[5]Some writers on methods of teaching believe the problem method to be superior to the project method. The point is made that the problem method permits the teacher to plan the work for his class in advance and hence secure a more efficient organization. It is also maintained that most if not all of the advantages of the project method may be secured. For a discussion of the problem method and illustration, see:

PARKER, S. C. Types of Elementary Teaching and Learning. Boston: Ginn and Company, 1923, Chapter X.

hensive meaning than is usually associated with it. Probably a reader may ask if we do not have learning projects and possibly enjoyment projects when certain types of assignments are properly motivated. Although it is likely that authorities would not agree in answering this question, it appears that Kilpatrick would say that an assigned exercise becomes a project when the pupil purposes the doing of it, provided this purpose "fixes the aim of the action" and guides the efforts the pupil makes to realize this aim.

The project method a point of view, not a teaching formula. The word "method" tends to suggest a procedure, a formula for the conduct of recitations and for this reason the phrase, "project method," is misleading. The project method is not a teaching formula; it is a point of view, a philosophy of education. According to it the specific habits, knowledge and general patterns of conduct specified by our educational objectives are to be acquired by children as by-products as they strive to realize their purposes.[6]

The project method has been described as a "method of living." This appears to mean that, when the method is employed, the school conditions approach those under which children learn as they endeavor to realize purposes outside of the school. Hosic has described the project method as "providing opportunity for children to engage in living, in satisfying, worth-while enterprises—worth-while for them; . . . guiding and assisting them to *participate* in these enterprises so that they may reap to the full the possible benefits."[7]

In seeking to arrive at an understanding of this point of view, one should bear in mind that it is not new in the sense that the term, project method, is new. Elements of it may be found in the writings of Rousseau and Pestalozzi; it is illustrated by Dewey in the University Elementary School described in his book "The School and Society" written in 1899. Phases of the project method are to be found in many discussions of teaching, especially those dealing explicitly with motivation. In fact it has been suggested that the project method represents a coherent synthesis of many of the best ideas about teaching which have been evolved since 1900 or a little earlier. Bagley[8] has stated that considered as such "it already ranks as a constructive achievement of the first magnitude."

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[6]This statement does not apply to "learning projects."

[7]Hosic, James F., and Chase, Sara E. Brief Guide to the Project Method. Yonkers-on-Hudson: World Book Company, 1924, p. 7.

[8]Bagley, William C. "Projects and purposes in teaching and learning," Teachers College Record, 22:288, September, 1921.

The point of view of the assignment method. When employing the assignment method, the attention of the teacher is focused upon controls of conduct (specific habits, knowledge and general patterns of conduct) which it appears desirable to have children learn; and exercises are formulated and assigned which are expected to furnish the basis for the necessary learning activities. The essential point of contrast between this method and the project method is that under the former the pupil is engaged in doing assigned exercises, while under the latter the basis of the pupil's learning activities is his own purposes which he is attempting to realize. It is true that a pupil may purpose the doing of an assigned exercise and when this occurs the assignment method tends to be equivalent to the project method so far as the pupil is concerned. The teacher's point of view or attitude, however, is fundamentally different; he is guided by educational objectives concerning the efficacy of learning exercises rather than by the interests, desires and purposes of his pupils.

The reader should bear in mind that points of view or attitudes toward the education of children are being contrasted rather than classroom procedures although these also will tend to differ. Furthermore, the two points of view are not mutually exclusive, at least as represented in educational practice. The project method does not mean that the pupils are free to do as they please. They are guided in their purposing and at times even restrained. Published accounts of school projects show that in the course of the work exercises are not infrequently assigned. The exercises usually relate to the purpose the pupils are attempting to realize and may be given very tactfully and perhaps indirectly, but they call for activity that probably would not occur in the absence of the assignment.

On the other hand, the assignment method as now conceived in theory and represented in much of our educational practice is not opposed to utilizing children's purposes as a basis of educative activity. Current discussions of motivation, which is a phase of instructional procedure associated with the assignment method, insist that the teacher should endeavor to get his pupils to *purpose* the doing of the exercises assigned. Teachers who approach their work with the attitude of the assignment method frequently succeed in getting their pupils to purpose the doing of some or even most of the exercises they assign. The secret of their success is their skill in motivating learning activity and in this phase of their work they may approach the project method so far as procedures are concerned, although their point of view is essentially different.

The attitude represented by the often quoted statement that "It doesn't matter what a boy studies as long as he doesn't like it" is frequently associated with the assignment method but it is incompatible with this method as now conceived. Other things being equal, it is desirable that the pupil enjoy doing the exercises assigned. The advocates of the assignment method, at least the more progressive ones, maintain that the teacher should capitalize children's purposes in motivating the doing of learning exercises. Furthermore, they would have the teacher adapt his learning exercises to the interests of his pupils and in doing this the assignment method approaches the project method. In fact some of the advocates of the latter method would probably insist that it becomes the project method. Kilpatrick's inclusion of "learning projects" and "enjoyment projects" appears to evidence the recognition of the possible necessity of exercises that are "assigned" by the teacher, but doubtless he would have the assignments made indirectly so that the pupils would not be aware that the teacher was imposing his purposes on them.

Illustrations of projects. Many cases of educative activity have been described in our educational literature under the title of "projects." The Twentieth Yearbook of the National Society for the Study of Education, Part I,[9] presents a compilation of 285 descriptions under this title but in most cases the activity of the pupils appears to be based on a problem or some other type of assigned exercise. A number of sample projects are described in Hosic and Chase, "A Brief Guide to the Project Method."[10] Collings[11] lists by title the projects worked out in a four-year experiment in a rural school and describes a number of representative ones. The following is a brief summary of the description of a "Corn Fair" which was carried out by a group of upper-grade children.

In discussing a visit to a "Harvest Show" in a neighboring town, the pupils proposed organizing a similar enterprise for their own community.[12] At subsequent conferences of the group the project was planned, the teacher making occasional suggestions. First a general program was agreed upon and committees were appointed for the following activities: (1) Exhibits, (2) Speakers, (3) Dinner, (4) Prizes

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[9]Published by the Public School Publishing Company of Bloomington, Illinois, 1921.
[10]Published by the World Book Company, Yonkers-on-Hudson, New York, 1924.
[11]This is a brief account of a project described in:
COLLINGS, ELLSWORTH. An Experiment with a Project Curriculum. New York: The Macmillan Company, 1923, p. 101-16.
[12]Four neighboring schools were invited to participate in the "Corn Fair."

and Judges, (5) Date, and (6) Demonstrations. In carrying out the plans, programs and posters were printed. Each pupil planned and made one or more exhibits. Certain ones practiced demonstrations to give at the fair.

At the first conference after the "Corn Fair," the project was discussed. The teacher remarked that the affair had been successful; everything working out as they had planned. She, however, suggested certain improvements that could be made if another one were held. The pupils also made a number of suggestions. At the request of the editor of the local paper for an account of their "Corn Fair," each of the children prepared an article, and at a conference the various accounts were read and the one considered best by the children was selected to send to the editor.

It is apparent from Collings' account that throughout this project the teacher was in the background. The pupils planned the various things to be done and did the work. A few suggestions were offered by the teacher, but many more came from the pupils. The group criticised suggestions made by its members. The purpose also was the children's. The teacher probably assisted in its development, and perhaps may have been somewhat responsible for its initiation, but it was clearly a pupil project and not imposed upon the class by the teacher and the school.

Collings[13] also describes how a project grew out of a question asked by a member of a primary group as to why Mrs. Murphy grew sunflowers along the rear of her vegetable garden. Inability of the group to answer this question resulted in a visit to Mrs. Murphy's garden to ascertain the answer and to learn how the sunflower differs from other flowers. In addition several references on the topic were read and each pupil prepared a report of the visit. Some of the other projects carried out by the pupils of the primary group are suggested by the following titles:

How Mr. Long makes molasses.
How the dandelion spreads so rapidly.
How tomatoes are canned at the local canning factory.
What are the different kinds of birds in our community?
How Mr. Murphy cares for his sheep in the winter.
Finding out how wheat flour is made at McNatt.

The illness of two members of the intermediate group formed the basis of a study of the causes of typhoid fever.[14] This in turn led to a

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[13]COLLINGS, ELLSWORTH. *Op. cit.*, p. 50.
[14]COLLINGS, ELLSWORTH. *Op. cit.*, p. 54.

study of the prevalence of diseases in the community and how to combat the house-fly. A report of the study of the prevalence of diseases formed the program of a community meeting at the school building.

Hotchkiss[15] describes a project that grew out of a pupil asking, "Why is Africa called the Dark Continent?" In attempting to secure the answer to this question, it became apparent that the class did not have an adequate concept of the topography, climate, vegetation, and so forth of this continent and plans were suggested and discussed for making Africa better known to the class and to other children in the school. It was decided to construct a large sand map on which would be represented all of the information about Africa the class could assemble.

A seed store project[16] was initiated during a study of seeds by asking the children "if they would like to have a seed store in school and they, of course, were most enthusiastic." The class made (1) "a seed store of big blocks," (2) "boxes for seeds," (3) labels for the different kinds of seeds, and (4) baskets in which to gather the seeds.

A study of municipal sanitation grew out of the question, "Why should a city have pure water?"[17] When it was found that the class could not answer this question, a committee consulted the city engineer and arranged for a visit to the city water plant. Another committee visited the city health office and gathered data on health conditions in the city.

The lack of satisfactory information concerning vocations resulted in junior high-school pupils taking the initiative in collecting this much needed information for the school library. "Each pupil volunteered to obtain personal interviews from at least five prominent persons in the professions, trades, commercial lines, management, manufacturing, or farming, and to report these to the class for discussion. A series of questions was agreed upon by the class. Committees were formed to take charge of each type of interview, as lawyers, physicians, and so forth and to work over material collected and to formulate one comprehensive report on its vocation."[18]

The beginning of a construction project is described as follows: "One noon a boy came to me early and said: 'Eight of us boys from

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[15]Hotchkiss, E. A. The Project Method in Classroom Work. Boston: Ginn and Company, 1924, p. 55-71.
[16]The Twentieth Yearbook of the National Society for the Study of Education, Part I. Bloomington, Illinois: Public School Publishing Company, 1921, p. 6.
[17]Ibid, p. 140.
[18]Ibid, p. 166.

the class belong to a club at the church and we want a bulletin board. Could we make one? Of course we want to pay for the lumber.' I said, 'Yes, if you will do it all.' And before they were through, they discovered the doing it all meant more than paying for the value of the lumber and the actual work of making the board."[19] This group found it necessary to determine what kind of lumber to use, how much lumber to buy, and the design of the bulletin board.

The relative efficiency of the assignment method and the project method. A method of teaching is not good or efficient because it is new and has advocates who advertise it extensively; a method of teaching is not inefficient or undesirable because it is old and may be labelled "traditional." The merits of an instructional procedure are determined by its effectiveness in engendering specific habits, knowledge and general patterns of conduct. Hence the logical way to determine the relative efficiency of the assignment method and the project method would be to have the two methods employed under similar conditions and the resulting effects upon the achievements of the pupils measured.

Collings[20] has reported an experiment in which he compares the project method applied to the entire curriculum of a rural school with the usual course of study and methods of instruction. In the experimental school no subjects were taught. The pupils, forty-one in number, were divided into three groups. The method of creating purposes and selecting those to be utilized as a basis of learning activity is described by Collings under the head of "curriculum principles." The essentials of the procedure are (1) the suggestion of purposes (potential projects) by both teacher and pupils, (2) a discussion by the members of the group, including the teacher, of the value and feasibility of the proposed projects, and (3) the selection of one for group participation, the majority determining the choice.

At the close of the experiment, which extended over a period of four years, the following tests were given in both the experimental school and two control schools.

Thorndike-McCall: Reading Scale, Form I (grades four to eight inclusive).
Haggerty: Reading Examination, Sigma I, Test I (grades one to three inclusive).
Van Wagenen: American History Scales, Information Scale A.
Hillegas: Scale for the Measurement of Quality in English Composition.
Woody: Measurements of Some Achievements in Arithmetic, Series B (grades four to eight inclusive).

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[19]The Twentieth Yearbook of the National Society for the Study of Education, Part I. Bloomington, Illinois: Public School Publishing Company, 1921, p. 166-67.
[20]COLLINGS, ELLSWORTH. An Experiment with a Project Curriculum. New York: The Macmillan Company, 1923, p. 346.

Collings: Tests for Measuring the Four Fundamental Operations in Arithmetic
(for the first four grades)

Starch: Spelling Scales, Forms 1 and 2.

Thorndike: Scale for Measuring Handwriting.

Hahn-Lackey: Geography Scale.

National Intelligence Tests. Scale A, Form 1 (grades four to eight inclusive).

Haggerty: Intelligence Examination, Delta I (grades one to three inclusive).

In addition Collings considered such items as, "percent of pupils enumerated in district enrolled in school," "attendance, truancy, cases of corporal punishment," "percent of parents visiting the school during the school year," and changes in community life.

The average of all test scores for the experimental school was 38 percent greater than the corresponding average of the control schools taken together. Although the tests used do not yield highly accurate scores and measure only certain achievements, the results tend to be convincing, especially when considered in connection with the data[21] relating to the conduct of pupils, the attitude of parents and the life of the community. However, when one inquires concerning the equivalence of the experimental school and the two control schools, he finds that several factors, other than the curriculum and the associated instructional procedures, differ. Among those listed by Collings are (1) library and equipment, being distinctly superior in the experimental school, (2) number of teachers (a second teacher was employed in the experimental school at the middle of the first year),[22] (3) weekly community meetings in which the pupils participated were "an integral part of the procedure" of the experimental school in contrast with about six community meetings of the "adult type" in the control schools, (4) a distinctly greater amount of supervision of the experimental school. In addition to the factors that Collings lists, one suspects that the teachers in the experimental school together with Collings,[23] who was the supervisor, exhibited much greater zeal and enthusiasm and invested more energy in the work than did the teachers in the control schools.

In view of these and other variable factors, it does not appear that this experiment answers the question concerning the relative merits of the assignment method and the project method in general. The data appear to justify the assertion that the project method as employed in the experimental school was successful, but they probably do not prove

[21]These are distinctly favorable to the experimental school.

[22]This condition is partially offset by the fact that the enrollment in the experimental school was 41 and only 29 and 31 in the control schools.

[23]Collings was the County Superintendent and therefore had an official relationship with the teachers.

that under "normal" conditions the project method would be more efficient or even as efficient as the conventional curriculum and the assignment method.

Logical evidence. Since the experimental evidence is not conclusive, it will be helpful to note certain logical considerations. In the first place one may properly raise the question whether the realization of purposes in which skills and information are used as tools may always be expected to result in the degree of mastery that is specified by our educational objectives. If we grant that the execution of a project represents a highly efficient initial learning of skills and information, it does not necessarily follow that projects alone will provide sufficient learning activity for the attainment of the desired degree of mastery or that project activity is the most efficient learning activity for the attainment of all objectives. When the student's purpose is merely one for which certain controls of conduct are needed as tools, the learning of them may stop short of the degree of mastery considered desirable. Of course if one accepts Kilpatrick's definition of a project and the type of project in which the student purposes the acquiring of certain specific habits or other controls of conduct, he would be forced to admit that when such a project was formed by a student, the ensuing project activity would represent the optimum learning activity, provided it conformed to the laws of learning.

The significance of the provision attached to the preceding statement is illustrated in the acquisition of skills necessary for the efficient operation of a typewriter. A student who purposes the acquisition of these skills will probably not exhibit efficient learning if he is simply provided with a typewriter and permitted to achieve his purpose in his own way. It is not likely that, undirected, he will choose the best practice exercises or distribute his periods of practice in the best way. The dominating purpose is not sufficient to insure efficient learning. Direction by the teacher, including the assignment of definite exercises or at least the suggestion of exercises and the distribution of practice periods, appears necessary for maximum efficiency. However, the presence of a dominating desire to learn contributes greatly to the efficacy of the learning process.

On the other hand, it should be noted that as one practices in acquiring motor skills, memorizes a formula, rule, poem, dates in history or other facts, solves problems, reads a textbook or engages in other learning activities, he derives certain by-products in addition to the direct outcomes. The latter tend to be obvious to both the teacher and learner, but the by-products (ideals, attitudes, interests, tastes, perspec-

tives and the like) tend to be intangible and frequently give little evidence of their existence. However, in general, as a pupil studies arithmetic, he is acquiring attitudes and interests as well as learning arithmetic; as he studies history, he learns facts, meanings, concepts and the like but he also is building up general patterns of conduct.

It has been asserted that the project method creates conditions which are distinctly favorable to the production of by-products, especially those commonly designated as initiative, resourcefulness, self-confidence, cooperation, willingness to assume responsibility, persistence, interest in the field of activity and the like. The extent to which the conditions essential to the engendering of such patterns of conduct are more apt to be secured under the project method than under the assignment method is a question on which there are differences of opinion. In the judgment of the writer, the method to which the teacher subscribes is in general less important than his sensitiveness in detecting opportunities for engendering patterns of conduct and his skill in handling the opportunities that arise.

Relation of the project method to the curriculum. We have been accustomed to think of the curriculum of the school in terms of certain subjects—reading, writing, arithmetic, spelling, history, algebra, Latin, physics, manual training, and so forth,—each of which represents certain controls of conduct to be acquired, that is, certain facts to be memorized, certain abstract and general meanings to be comprehended, certain rules and principles to be mastered, and the like. It has been considered important that each child study the prescribed subjects and cover the prescribed content of each. During recent years this concept of the function of the school has been modified, especially in the kindergarten and primary grades, but many teachers as well as the great majority of the general public still consider it vital that the school have a definite curriculum and the "ground" prescribed by it be covered by all pupils who are rated as "passing."

The project method implies a concept of school work which when contrasted with that of a definite curriculum may be called revolutionary. Since under the project method the activity of the pupil is devoted to the realization of his purposes, the "ground" he covers is determined by them. In view of the differences in the interests of children, it is obvious that, unless they are subject to more rigid direction than is compatible with the project method as interpreted by most of its advocates, the pupils completing a division of our school system will differ in the content of their achievements.

Until recently the desirability of a definite content for each school subject and hence a uniform content for all students who take the same subjects have not been considered as debatable questions by most educators. On the other hand an increasing number of students of education are now maintaining that uniformity of content is not essential and perhaps, all things considered, not desirable. As is the case in many controversies, there appears to be some truth on both sides. In general it is desirable that a school formulate a curriculum, but the degree of its definiteness and of conformity to it may properly vary with the maturity of the students, the training of the teachers and the expertness of the supervision of instruction. Other things being equal, a definite curriculum and conformity to it appear least desirable in the kindergarten and the graduate school of the university. Definite curricular requirements are probably most desirable from the fourth grade through the ninth and are more desirable in the "tool" subjects than in the "content" subjects.

If all of the school activity of pupils is based on projects, their learning will not conform to a definite curriculum unless their purposing is directed by the teacher to a greater extent than the project method assumes. At some stages of school work, and in some phases at all stages, certain departures from a definite curriculum may be justified and any undesirable gaps may be eliminated by the assignment of appropriate learning exercises. The extent of these gaps, and hence the need for the assignment of learning exercises will depend upon the resourcefulness and skill of the teacher in directing the purposing of his students. Under favorable conditions such as existed in Collings' experiment (see pages 12, 13), there may be no undesirable gaps.

Thus we appear to be justified in concluding that the project method and a fixed curriculum are necessarily incompatible. The project method may be employed, sometimes extensively, without undesirable departures from a curriculum typical of those now adhered to by our schools. However, the adoption of the project method as the typical instructional procedure will usually make it impossible to follow a prescribed curriculum.

Relation of the project method to the level of intelligence. Our study of the intelligence of children has led to the conviction that instructional procedures should be adjusted to their capacity to learn. In general a given procedure is not equally effective with all children of a given age or even with all who belong to the same school grade. This is true of the project method, although it represents a general procedure and thus some adaptation to individual differences may be made,

but one may properly raise the question, "Is the project method equally appropriate for all levels of intelligence?"

Intelligence is commonly defined in general terms as "capacity to learn" or somewhat more specifically as "capacity to do school tasks," but, either as phases of this capacity or as additional elements, intelligence includes traits to which we are accustomed to assign such names as curiosity, interests, initiative, resourcefulness, perseverance, enterprise and the like. Children who are low in the scale of intelligence are usually lacking in curiosity concerning their environment, have few interests, exhibit little initiative, are not resourceful, seldom persevere and are not enterprising. On the other hand bright children tend to exhibit the opposite tendencies. It is therefore apparent that bright children are more likely to have purposes which they wish to realize and, when they do not, may be easily stimulated to purposing by the teacher. We recognize this fact by describing bright children as leaders. On the other hand children possessing only average or less than average intelligence have few interests, and as a rule it will be difficult for the teacher to stimulate a dominating purpose that will "fix the aim of action, guide its processes and furnish the necessary driving force."

The considerations of the preceding paragraphs appear to justify the conclusion that the project method is more easily employed with pupils on the higher levels of intelligence than with those on the lower levels. It seems doubtful if many of the latter group can be stimulated to purpose the doing of a sufficient number of things to provide much of the activity required to educate children of limited intelligence. When less capable pupils are grouped with those on the higher levels of intelligence, this conclusion may need modification because the brighter pupils will exercise leadership. In such cases, however, those on the lower levels of intelligence will profit least from projects because the others will do most of the work.

Conclusion in regard to the relative merit of the assignment method and the project method. It has doubtless been apparent to the reader of the preceding pages that in the judgment of the writer both the assignment method and the project method have merit. There appears to be no doubt but that, as employed by some teachers, the project method is a highly efficient instructional procedure. It, however, does not follow that if the assignment method were completely replaced by it, the efficiency of our schools would be increased. Sometimes, especially when fundamental skills are to be mastered, the assignment method seems superior. Hence, it appears reasonable to conclude that (1) a teacher should afford opportunity for his pupils to realize their

purposes, provided they appear to be worth while; (2) a teacher should encourage purposing and cultivate embryonic purposes; (3) on the other hand, the teacher should expect to employ the assignment method whenever his pupils fail to propose appropriate projects. In many cases this will mean that the assignment method is the predominant instructional procedure.[24]

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[24]The statements of two writers are quoted in support of this conclusion.

"I am inclined to believe that, if provision is made for giving children scope and opportunity to work out many of their spontaneous purposes, there can well be some measure of controlled and directed activity to take care of the types of learning which our adult judgment deems essential and which the child may not happen to hit upon accidentally. Until further evidence is available, I should say that it is better that he should be encouraged to accept this control as a matter of course, than that we should attempt to delude him into the belief that he is making a free choice when in reality the choice is made by someone else. . . . Instead of decrying adult control as a necessary evil, we see it now as an essential virtue through the agency of which, and *primarily through the agency of which*, human progress has been made possible. The great educational problem is to use it wisely but not to abuse it; to recognize where it should stop but not to abandon it entirely even in theory." (BAGLEY, WILLIAM C. "Projects and purposes in teaching and learning," Teachers College Record, 22:295-96, September, 1921.)

"In general I believe this principle will be found to hold. If the knowledge or skill is of such a character that undesirable results follow directly from failure, purposeful activity may be depended upon to build up slowly, by trial and error methods, correct habits and adequate degrees of skill. But if the operation of the habit or skill is obscure, so that cause and effect may not be easily and directly traced, mere activity, except by chance, will not produce the desired result.

"Our civilization is the product of an age-long evolution in which the best solutions for our common problems have been slowly and laboriously built up by the master minds of the ages. The basic function of the school is to transmit this social inheritance to the oncoming generation. Other things being equal, the more efficiently this duty is discharged, the greater will be the contribution to the social progress which the new generation will make.

"From this point of view the school must not only see to it that the child acquires the fundamental skills, but also that he wastes no time in doing so. If compulsory drill exercises under expert teaching will short-circuit the slow evolutionary development which comes from the use of skill in purposeful activity, then not to drill a child is to handicap both him and society. . . .

"I *can find nothing intrinsically wrong with drill*. Under right conditions and done with the proper motives, it is one of the most efficient forms of educational activity. It is true that all persons do not need drill. Even in Gary in all the elementary grades there were children who had spent their entire educational lives in the Gary schools, yet who were able to spell perfectly the tests for their grade. There are individuals who without drill are able to drive an automobile or an aeroplane the first time they try it, who, in other words, learn so readily by doing that they need no other training. The essential point to notice, however, is that the number of such individuals is small. On the basis of such measurements as have been made we can say with some definiteness that the number of children who are "natural-born" spellers is approximately ten percent of the total. For the other 90 percent the acquisition of adequate skill involves either a prolonged period of purposeful activity or some form of direct drill." (COURTIS,

The technique of the project method. The basic difference between the project method and the assignment method is that in the former the pupils propose things to do while in the latter the teacher assigns exercises to be done. Hence, the technique of the project method concerns the procedures employed in order to stimulate pupils to want to do things having a high educative value. Occasionally as in the project involving the construction of a bulletin board, (see page 12) the teacher may be approached by the pupils with a request to be allowed to do something, but usually he will find it necessary to stimulate his pupils to form purposes. It will seldom be wise for him to approach the group with the direct inquiry, "What would you like to do?" Although this is what the teacher desires to know, he should seek the answer indirectly.

In the experiment described by Collings (see pages 12, 13), a conference period was provided in which the pupils as well as the teacher asked questions. Some of these related to their physical environment, others to current events. A number represented the natural interests of the children. Frequently a project grew out of a question asked by a pupil during the conference period. The basis of the teacher's success appears to have been tactful suggestions plus keenness in detecting and in understanding embryonic purposes. After the purposing of projects becomes fashionable in a school or in a group, the teacher's task is made easier.

When all of the work of a group is not placed on a project basis, the teacher's technique should be essentially the same in principle, although it need not be as elaborate. The important requirement is that he demonstrate a sympathetic receptiveness to proposals of projects and that he be alert in detecting symptoms of embryonic purposes. Many projects have started with a question asked by a pupil; if he is sincere, it represents a desire to know, a purpose. A teacher can easily discourage a questioning attitude on the part of his pupils by ignoring their questions or by pronouncing those of which he does not approve as irrelevant or silly. The ridicule and even sarcasm which not infrequently greet strange and awkwardly worded questions have undoubtedly killed or discouraged many developing purposes. It is obvious that the project method requires that the teacher respond courteously and sympathetically to any sincere question asked by a pupil.[25]

STUART A. "Teaching through the use of projects or purposeful acts," Teachers College Record, 21:142-44, 146, March, 1920.)

[25]For an interesting account of projects developed from questions asked by pupils, see:

LINKE, EDITH A. "An experiment in teaching in response to children's questions," Teachers College Record, 21:55-67, January, 1920.

A question, even if sincere, seldom represents a "dominating purpose." Usually it indicates only the beginning of one. Hence, if the teacher immediately answers the question to the satisfaction of the pupil, a dominating purpose will not develop because the desire has been satisfied. The concept of the project method implies that the pupils are to realize their purposes with a minimum of assistance from the teacher. Under this method he is a director of their learning activities to a greater extent than when exercises are assigned. He may make suggestions and even assist in the project, but when any of the planning or the ensuing work is done for the pupils, their opportunity to learn is limited and their interest in the project may be lessened.

A large number of the published descriptions of projects imply that the teacher[26] initiated the project by asking the class, "Would you like to do............?" In such cases the pupils may form a dominating purpose but it not infrequently happens that the project becomes merely an assignment. Whenever a teacher approaches a class with a definite project in mind and then endeavors to have his pupils purpose the doing of it, his instructional procedure tends to become that of the assignment method. Furthermore, after the pupils have formed a purpose, the teacher must permit them to devise plans for its realization. A teacher employing the project method will seldom if ever be able to plan in advance the particular projects that his class will undertake. Instead he must utilize the purposes exhibited by his pupils.

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[26]See especially the descriptions given in the Twentieth Yearbook of the National Society for the Study of Education, Part I. Bloomington, Illinois: Public School Publishing Company, 1921.

NOTE—Because of the fact that excellent bibliographies concerning the project method are contained in most of the references given in this circular, especially in The Twentieth Yearbook of the National Society for the Study of Education, Part I, no bibliography is included in this publication.